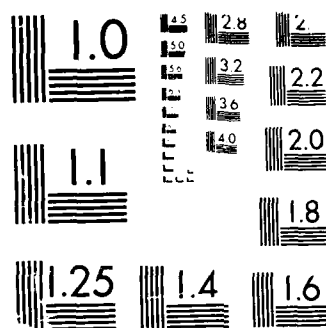


AD-A192 966 A MODAL APPROACH TO ARCTIC NOISE MODELLING WITH IMPLIED 1/1
VERTICAL COHERENCE(U) NAVAL OCEAN SYSTEMS CENTER SAN
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PORT DOCUMENTATION PAGE

2a. SECURITY CLASSIFICATION AUTHORITY		1b. RESTRICTIVE MARKINGS	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE		3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION Naval Ocean Systems Center	6b. OFFICE SYMBOL (if applicable) NOSC	7a. NAME OF MONITORING ORGANIZATION Naval Ocean Systems Center	
6c. ADDRESS (City, State and ZIP Code) San Diego, California 92152-5000		7b. ADDRESS (City, State and ZIP Code) San Diego, California 92152-5000	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Naval Ocean Research and Development Activity	8b. OFFICE SYMBOL (if applicable) NORDA	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State and ZIP Code) NSTL, MS 39529-5004		10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. PROJECT NO. TASK NO. AGENCY ACCESSION NO. 62435N MA63 DN307 376	
11. TITLE (include Security Classification) A Modal Approach to Arctic Noise Modeling with Implied Vertical Coherence			
12. PERSONAL AUTHOR(S) R. B. Williams			
13a. TYPE OF REPORT Presentation/speech	13b. TIME COVERED FROM Nov 1987 TO Nov 1987	14. DATE OF REPORT (Year, Month, Day) February 1988	15. PAGE COUNT
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES FIELD GROUP SUB-GROUP		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) modal energy wavelength correlation lengths	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) Analytic formulas of the modal attenuation coefficients appropriate for deep Arctic under-ice conditions, and modal energy partitioning of ambient noise sources are proposed. These functions can be used, together with various assumed spatial and temporal distribution functions to calculate various statistical ambient noise functions, such as vertical coherence. Vertical noise data between 15 and 50 Hz have been analyzed for model comparison, using a bandwidth of about 5 Hz. These data show that the vertical coherence usually has a $\sin x/x$ dependence, with the first zero crossing at one wavelength. Sometimes, however, zero crossing lengths of more than two wavelengths are observed. Longer correlation lengths are consistent with much of the noise energy radiating from a small region, although other interpretations are possible. Initial simple model calculations show agreement with the data. A strong nearby source of noise will cause the correlation to lengthen, while several more distant sources support the one wavelength zero crossing result. Initial sensitivity calculations, however, show that the vertical coherence function by itself is not a good validator of the model functions. Other statistics will be sought to further examine model validity. [Work supported by NORDA and NOSC 6.2 Arctic programs.] Presented at the Acoustical Society of America, 16-20 November 1987, Miami, Florida.			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL R. B. Williams		22b. TELEPHONE (include Area Code) (619) 553-3096	22c. OFFICE SYMBOL Code 541

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M4. A modal approach to Arctic noise modeling with implied vertical coherence. R. B. Williams (Naval Ocean Systems Center, San Diego, CA 92152)

Analytic formulas of the modal attenuation coefficients appropriate for deep Arctic under-ice conditions, and modal energy partitioning of ambient noise sources are proposed. These functions can be used, together with various assumed spatial and temporal distribution functions to calculate various statistical ambient noise functions, such as vertical coherence. Vertical noise data between 15 and 50 Hz have been analyzed for model comparison, using a bandwidth of about 5 Hz. These data show that the vertical coherence usually has a $\sin x/x$ dependence, with the first zero crossing at one wavelength. Sometimes, however, zero crossing lengths of more than two wavelengths are observed. Longer correlation lengths are consistent with much of the noise energy radiating from a small region, although other interpretations are possible. Initial simple model calculations show agreement with the data. A strong nearby source of noise will cause the correlation to lengthen, while several more distant sources support the one wavelength zero crossing result. Initial sensitivity calculations, however, show that the vertical coherence function by itself is not a good validator of the model functions. Other statistics will be sought to further examine model validity. [Work supported by NORDA and NOSC 6.2 Arctic programs.]

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